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EXPLANATION OF SIGNIFICANT DIFFERENCES

Outboard Marine Corporation Superfund Site
Outboard Marine Corporation Plant 2 (Operable Unit 4)
Waukegan, IL

July 2012

U.S. Environmental Protection Agency
Region 5

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EXPLANATION OF SIGNIFICANT DIFFERENCES

Outboard Marine Corporation National Priorities List Site

ILD000802827 - Lake County
Waukegan, Illinois

Summary: This Explanation of Significant Differences (ESD) has been prepared by the United States Environmental Protection Agency for the Outboard Marine Corporation (OMC) National Priorities List Site located in Waukegan, Illinois. The ESD is to document remedy changes on the eastern portion of the OMC Site, which pertain to the OMC Plant 2 Record of Decision (ROD) of September 10, 2007. The changes are needed because additional areas of contamination were discovered while conducting the remedial action on the eastern portion of the Site, which must be addressed.

The major additions include constructing a multi-layer cap within the Dunes Area that will extend eastward from the East Containment Cell. In addition, portions of the North Ditch and other areas on the eastern part of the Site, which contain contaminated soil and sediment above one part-per-million of polychlorinated biphenyls and/or two ppm of polycyclic aromatic hydrocarbons, must also be excavated and either capped or backfilled with clean fill and capped. Certain areas of the Plant 2 building slab require additional excavation where possible, and backfilling with clean fill. This ESD documents these remedy changes, as the 2007 ROD remedial action objectives cannot be fully achieved under the ROD as presently written.

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EXPLANATION OF SIGNIFICANT DIFFERENCES
Outboard Marine Corporation National Priorities List Site
Operable Unit 4

I. Introduction

A. Site Name and Location

The Outboard Marine Corporation (OMC) Plant 2 Site (“Plant 2 Site” or the “Site”) is the fourth of four operable units (OU) of the OMC National Priorities List (NPL) Site. The Site is located at 90 Sea Horse Drive in Waukegan, Illinois; about 40 miles north of Chicago (see Figure 1) and 10 miles south of the Illinois/Wisconsin border. Operable Unit 4 is a rectangular-shaped area bounded by the North Ditch on the North, Seahorse Drive on the south, Lake Michigan on the east, and the western edges of both the West PCB Containment Cell and OMC Plant 2 on the west. In addition to the Plant 2 Site (OU 4), the entire OMC Site also includes the Waukegan Harbor (OU 1), the Waukegan Manufactured Gas and Coke Plant (OU 2), and the three PCB containment cells (OU 3). Figure 2 details the OU locations.

B. Identification of Lead and Support Agencies

Lead Agency: U.S. Environmental Protection Agency (U.S. EPA)
Support Agency: Illinois Environmental Protection Agency (IEPA)

C. Statement of Purpose

This decision document sets forth the basis for issuing an Explanation of Significant Differences (ESD) to the September 2007 Record of Decision (ROD) for the OMC Plant 2 Site of the OMC Superfund Site in Waukegan, Illinois. Operable Unit 4 encompasses two separate RODs. The 2007 ROD, for which this ESD is being prepared, pertained only to the contaminated soil, sediment, and building demolition remedial actions (RAs). This ESD will address additional remedial activities for more recently discovered contamination in the soil and sediment media on the eastern portion of the Site.

The second OU 4 ROD was issued in February 2009 to address the remediation of the groundwater dense non-aqueous phase liquid (DNAPL)¹ that originated from beneath the Plant 2 area and became the source of a larger groundwater contamination plume. The 2009 ROD is not being addressed in this ESD. Also, U.S. EPA will issue a separate ROD Amendment in 2012 to address the soil contamination associated with two other areas within the Plant 2 Site (the Old Die Cast area on the western side of the Site and the plant’s northerly and westerly utility corridors).

¹ DNAPLs are high concentrations of chlorinated solvents, such as trichloroethylene, that are denser than water. Because of their physical and chemical properties, they sink to the bottom of the groundwater aquifer and do not mix easily with water, acting as a continual source of groundwater contamination until they are removed. Other DNAPLs include coal tars, which contain polycyclic aromatic hydrocarbons (PAHs), and transformer oil, which usually includes mixtures of polychlorinated biphenyls (PCBs).

D. Statutory Basis for Issuance of the ESD

This decision document sets forth the basis for the determination to issue an ESD to the September 2007 ROD for the OMC Plant 2 Site or OU 4 in Waukegan, Illinois. Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA)² and 40 Code of Federal Regulations (CFR) 300.435(c)(2)(i) and 300.825(a)(2) of the National Contingency Plan states that U.S. EPA shall publish an ESD between the RA being undertaken at a site and the RA set forth in the ROD if U.S. EPA determines that the RA at the Site differs significantly from the RA selected in the ROD. U.S. EPA shall also publish the reasons such changes are being made. U.S. EPA policy and regulations³ indicate that an ESD, rather than a ROD Amendment is appropriate where the changes being made to the RA are significant but do not fundamentally alter the overall remedy with respect to scope, performance, or cost.

E. Summary of Circumstances Necessitating this ESD

The 2007 ROD determined that the RAs for the soil, sediment and building media included:

1. excavating soil and sediment which exceed one mg/kg or part-per-million (ppm) concentrations of polychlorinated biphenyls (PCBs) and/or two ppm concentrations of polycyclic aromatic hydrocarbons (PAHs);
2. demolishing the PCB-impacted portions of the OMC Plant 2 building;
3. disposing excavated soil and sediment and non-recyclable building debris into appropriate licensed off-site facilities; and,
4. replacing excavated material with clean soil fill to grade.

Material containing PCBs of 50 ppm or higher have been and will continue to be disposed of at a facility that complies with Toxic Substance Control Act (TSCA) regulations. The remainder (containing less than 50 ppm PCBs) are being disposed of in a facility that complies with 35 Illinois Administrative Code (IAC) Section 811 (a "municipal landfill").

Implementing the selected RAs and the necessary modifications under this ESD is expected to allow for unlimited use and unrestricted exposure (UU/UE)⁴ in areas where remediation has achieved the Remedial Action Objectives (RAOs) and cleanup levels of the 2007 ROD. After completing this ESD and the forthcoming ROD Amendment, the areas still containing concentrations of contaminants above cleanup levels, or those areas in which obstacles prevent

² 42 United States Code (USC) §9617(c).

³ See 40 CFR §300.435(c) (National Contingency Plan); EPA Office of Solid Waste and Emergency Response Directive 9355.3-02.

⁴ Unrestricted exposure is used to indicate that given unlimited use of the remediated property, no exposure to contaminants will occur.

sufficient excavation of contaminants to meet the cleanup levels, will be filled and/or capped, rendering them inaccessible to human contact.

Because the selected building and soil cleanup actions in the September 2007 ROD allowed for the targeted areas to be cleaned up, U.S. EPA did not originally identify Institutional Controls (ICs)⁵ as a component of the soil and sediment remedy. However, due to difficulties in achieving cleanup objectives of the 2007 ROD in some areas, ICs will be needed after implementing the RA changes for OU 4 where contamination will remain in place. The areas are present throughout OU 4.

The selected response actions in the September 2007 ROD addressed PCB and PAH-impacted soil, sediment and building media. U.S. EPA anticipated these actions to be the final cleanup for the soil, sediment and building media at the OMC Plant 2 Site; however, additional RAs and ROD clarifications have become necessary and are documented in this ESD. The additional remedial activities under this ESD are being implemented within the eastern portion of the OMC Plant 2 Site and involve the Dunes Area, the North Ditch, and the slab and subslab soils beneath the Former Smelter Building Slab (“Smelter Slab”), and Die Cast⁶ areas of the former Plant 2 building. These areas contain soils and/or sediment that could not be excavated sufficiently to achieve the identified cleanup levels and need to be either backfilled with clean material and/or capped. Figure 3 depicts the Site features and remediation areas.

The Dunes Area, which encompasses Area 5, is an area where excavation was completed but PCB contamination has since been discovered at the margins of the excavation and to the north and east of Area 5 (see Figure 4). The main area of concern is the area directly east of the East Containment Cell. This area contained two samples having PCB concentrations of 140 ppm and 190 ppm respectively, both exceeding TSCA criteria (50 ppm PCB). Since this contamination cannot be excavated without endangering the integrity of the East Containment Cell slurry wall, the area must be capped and restored. Figure 5 depicts the extension of the existing East Containment Cell cap. The remaining positive samples in the Dunes Area to the east of Area 5 ranged from less than one ppm to 19 ppm. These areas will be addressed by excavation to achieve 1 ppm PCB and backfilling with clean fill.

On-site portions of the North Ditch (Area 3) that remain contaminated with PCBs after being excavated to the prescribed depth will be capped with a geotextile fabric, followed by a sand layer, and rock armor surface. The on-site areas of the North Ditch showed PCB contamination ranging from nondetect to 700 ppm, with the next highest level at 290 ppm. Figure 6 depicts the North Ditch sediment cap. Sediment contamination in the off-site portions of the North Ditch largely showed PCB levels above the cleanup level of 1 ppm but below 50 ppm. These off-site portions have since been excavated to meet the cleanup level (see Figure 7).

⁵ Institutional controls (ICs) are non-engineered instruments such as administrative and/or legal controls that can be used to help minimize the potential for human exposure to site contaminants and/or protect the integrity of a cleanup remedy. There are several different types of ICs and sometimes multiple IC types are used or “layered” for extra measures of safety.

⁶ This area is not to be confused with the “Old Die Cast” Area on the western side of the Plant 2 Building footprint. The ODC area is being addressed by the 2012 ROD Amendment to the 2007 ROD for OU 4.

The Smelter Slab and Die Cast areas located within the eastern part of the Plant 2 footprint also showed residual contamination below the water table. Under the 2007 ROD, these areas must be excavated and backfilled with clean material. Recent work, however, has revealed obstacles to soil excavation such that ROD cleanup level concentrations, i.e., one ppm for PCBs and/or two ppm for PAHs, may still be exceeded. One such obstacle was the discovery of a concrete obstruction in the Smelter Slab Area. After removing the concrete, U.S. EPA will sample the excavated area. If the results indicate the presence of PCBs levels exceeding 50 ppm, then excavation will continue until cleanup levels are reached. If the necessary excavation proves to be too deep with respect to the water table, then the opening will be backfilled with clean fill to grade, seeded and mulched. Other structures or circumstances that could prevent further excavation may also be encountered as the work proceeds. Remediation of any other areas exceeding cleanup levels in or around Plant 2 will be addressed similar to the Smelter Slab and Die Cast areas in order to protect human health and the environment.

The NCP establishes an expectation that U.S. EPA will use treatment technology to address the principal threats at a site. We consider the soil and sediment and building media at the OMC Plant 2 Site to present low level, long-term threats to human health or the environment and to not be principal threat waste.

Long-term protectiveness for the Site will require compliance with effective ICs. Hence, effective ICs must be implemented, monitored, maintained and enforced along with maintaining Site remedy components so that the remedy will function as intended. To that end, EPA will prepare an IC Plan, in consultation with IEPA, to identify the required IC activities, the roles and responsibilities of the parties for each activity, along with the specific need for an institutional control implementation and assurance plan (ICIAP) or IC Work Plan. This plan will be submitted to the agencies by the city of Waukegan to ensure ICs are in place and effective. The ICIAP may include additional IC evaluation activities, planning for additional IC implementation or enhancements, as needed, and ensuring long-term stewardship. U.S. EPA will develop updated maps which depict the current conditions of the Site and areas which do not allow UU/UE will be developed as a part of ICIAP or IC Plan. Long-term stewardship will also be planned for the ICIAP. U.S. EPA will produce an IC Plan in 2013 when the last of the cleanup construction work at the OMC Site is currently targeted for completion.

Another purpose of this ESD is to clarify the cleanup levels with respect to PAHs. The 2007 ROD identified PAHs as some of the contaminants of concern (COCs) at the Site. This ESD emphasizes and documents that the remediation of PAH contaminants to achieve a two ppm cleanup level pertains only to the carcinogenic PAHs (cPAHs). The cPAHs are a subset of chemicals within the PAH family that pose the most serious health risks, such as cancer. Table 1 provides a list of the cPAHs and noncarcinogenic PAHs. The baseline risk assessment that supports the 2007 ROD for OU 4 indicated that the cPAHs posed much greater risks to human health and the environment and therefore drove the RA.

F. Agency Determination

U.S. EPA, in consultation with IEPA, has reviewed the proposed changes to the OMC Plant 2 Site remedy in accordance with CERCLA and U.S. EPA policy and guidance. We have

determined that the proposed changes to the 2007 ROD are significant but do not fundamentally alter the overall Site RA with respect to scope, performance, or cost. Thus, we find it appropriate to issue an ESD to document the changes.

G. Administrative Record

In accordance with 40 CFR §300.435(c) of the NCP, this ESD and supporting documentation will become part of the Administrative Record for the OMC Plant 2 Site. The Administrative Record is available for public review at the following locations:

EPA Region 5 Records Center
77 W. Jackson Blvd. - 7th Floor
Chicago, IL 60604
8 a.m. – 4 p.m. Monday-Friday

Waukegan Public Library
128 N. County St.
Waukegan, IL 60085
9 a.m. – 9 p.m. Monday-Thursday
9 a.m. – 6 p.m. Friday
9 a.m. – 5 p.m. Saturday
1 p.m. – 5 p.m. Sunday

II. Location and Site History, Contaminants, and Selected Remedy

A. Location and Site History

The entire OMC Site covers approximately 130 acres and includes the Waukegan Harbor. Due to its large area, U.S. EPA divided the Site into four OUs. Operable Unit 1 is the Waukegan Harbor which involves contaminated sediment and surface water; OU 2 is the Waukegan Manufactured Gas and Coke Plant parcel and the underlying soil and groundwater; OU 3 includes the three PCB containment cells (East, West, and the former harbor slip 3); and OU 4 encompasses the OMC Plant 2 Site area and consists of contaminated media that includes exposed concrete, soils beneath and around the Plant 2 footprint, the North and South Ditch sediments, and the Dune Area and beach area soil north of Seahorse Drive (see Figure 2).

This ESD only addresses significant changes to the OMC Plant 2 Site (OU 4) remedy. The Plant 2 Site is a 60-acre lakefront parcel containing an abandoned 23-acre industrial facility in which OMC made outboard motors from about 1948 until 2000. The facility used PCB-containing hydraulic and lubricating oils in its production lines beginning in 1961 until 1972 and routinely discharged some of the fluids via sewer lines into Waukegan Harbor. The oils and fluids became the source of high concentrations of PCB contamination in harbor sediment until OMC plugged its sewer lines in 1976. OMC also operated several vapor degreasers at the OMC Plant 2 facility to clean newly-made parts with trichloroethylene (TCE). Leaking degreasers and/or TCE storage tanks over the years created a TCE groundwater contaminant plume and DNAPL beneath the OMC Plant 2 Site. OMC declared bankruptcy in December 2000 and ceased all manufacturing operations in August 2001. The building was abandoned in December 2002. Much of the OMC Site is now owned by the city of Waukegan.

Since the summer of 2002, U.S. EPA has conducted several time-critical removal actions to stabilize and secure the Plant 2 Site. In January 2006, U.S. EPA began a removal action in Area 5 near the East Containment Cell because high levels of PCBs were found in the sands outside the cell. U.S. EPA contractor CH2M Hill excavated over 6,000 cubic yards (yd³) of sandy soil containing PCB concentrations of 10 to 14,000 ppm and disposed of the material in approved off-site facilities. U.S. EPA also cleaned out several storm sewers leading from the OMC Plant 2 facility to prevent recontamination of the beach front by residual PCBs in the sewer lines. In January 2007, we undertook a final removal action in which we disposed of about 25 PCB-containing electrical transformers at the facility and also removed an extensive amount of copper wire and electrical connectors from the plant to reduce the potential exposure of scavengers who might break in to the facility.

U.S. EPA began a remedial investigation (RI) at OMC Plant 2 in 2004 to determine the nature and extent of contamination in Site groundwater, sediment, soil, and inside the Plant 2 building. U.S. EPA issued the RI Report for Plant 2 containing the study results and a human health and ecological risk assessment in April 2006. We began a feasibility study (FS) in 2005 to examine Site cleanup alternatives designed to protect human health and the environment and issued the FS Report for the Plant 2 Site in December 2006.

During the RI and FS, U.S. EPA identified four media of concern in which chemical contaminants may exceed human health or ecological risk-based cleanup levels at the Plant 2 Site. The media are: (1) soil and sediment; (2) OMC Plant 2 building materials; (3) groundwater; and (4) DNAPL.

U.S. EPA issued a ROD in September 2007 that addressed the contaminants (mostly PCBs) found within large portions of the OMC Plant 2 building and in soil and sediment outside the facility. The ROD called for demolishing the building, disposing of the contaminated building material, and excavating and disposing the contaminated soil and sediment.

B. Contaminants of Concern

During the RI for the OU 4 ROD, U.S. EPA conducted a study of potential risks to public health, wildlife and the environment at the Plant 2 Site. We found groundwater and soil samples taken from beneath the groundwater table to be contaminated with volatile organic chemicals (VOCs) such as TCE and its breakdown products, one being vinyl chloride. The location of these contaminants is associated with the groundwater contaminant plume and its DNAPL source, situated under the Plant 2 building concrete slab on the western side of OU 4. The TCE DNAPL presented a constant source of dissolved TCE in the groundwater, leading to potential drinking water and inhalation risks. In addition, PCB DNAPL was also found. The DNAPL and groundwater aspects of this cleanup were subsequently addressed under a February 2009 ROD⁷ for OU 4, and are not associated with this ESD.

U.S. EPA identified PCBs and PAHs (each as a group) as contaminants of concern (COCs) in OMC Plant 2 Site soil and sediment; PCBs were a COC inside the OMC Plant 2 building. The RAOs for both the OMC Plant 2 Site soil, sediment and the building media are to actively reduce COC concentrations to levels that would allow the property (except for the PCB containment cells) to be re-used for residential and recreational purposes without restrictions, and would protect ecological receptors. The remediation would also meet applicable or relevant and appropriate requirements (ARARs) for environmental cleanup actions at the Site. Table 2 presents the contaminated media and respective cleanup levels to achieve the RAOs.

Table 2 - Site Cleanup Levels for COCs in OMC Plant 2 Site Media

Compound	Media	Cleanup Levels (Source)
PCBs	Soil and sediment	1 ppm (Superfund PCB cleanup guidance)
PAHs	Soil	2 ppm (State published background levels)
PCBs	Building and debris	1 ppm (Superfund PCB cleanup guidance)

⁷ The 2009 ROD goal was to reduce the levels of TCE and other VOCs in a groundwater and subsurface soil beneath Plant 2 to allow for unrestricted groundwater use. The selected remedy involved in-place chemical reduction of the TCE DNAPL; enhanced bioremediation of TCE in groundwater; and constructing and operating an air sparge curtain on the site to prevent groundwater contamination from moving offsite during the bioremediation.

C. Description of the 2007 ROD Selected Remedy

The 2007 ROD for OU 4 prescribed the excavation of nearly 40,000 yd³ of soil and of North Ditch and South Ditch sediment containing greater than one ppm PCBs and/or two ppm PAHs. About 1,500 yd³ of excavated material were estimated to contain greater than 50 ppm PCBs and were to be transported by truck for off-site disposal to a TSCA-compliant facility. The remainder of the excavated material would be transported by truck for off-site disposal into a municipal landfill facility. Excavated areas would be backfilled to grade with clean soil and re-vegetated.

The remaining 600,000 square feet (ft²) of the PCB-impacted Plant 2 building were to be demolished with off-site disposal to a TSCA-compliant facility of an estimated 1,600 tons of debris and 9,500 tons of concrete having concentrations of 50 ppm PCBs or greater. About 40,000 tons of debris and concrete and 11,000 yd³ of impacted soil around the building were to be transported by truck for off-site disposal to a municipal landfill facility. Nearly 4,000 tons of steel were estimated to be available for recycling.

The results of U.S. EPA's remediation at that time suggested the presence of residual contamination in several areas. This ESD focuses on the additional remedial activities required to address the additional newly discovered contamination found on the eastern portion of the Plant 2 Site, which includes portions of the North Ditch (Area 3), Area 5 situated within the Dunes Area, the Smelter Slab Area and Die Cast Area on the eastern side of the Plant 2 building footprint, and other contaminated areas not previously identified in the remedial design (RD) documents. These newly discovered areas of contamination may require additional excavation (if possible), backfilling with clean soil, capping (where necessary), and restoration to prevent exposures to contaminants.

As previously noted, the February 2009 ROD for OU 4 addressed only the groundwater and DNAPL contamination beneath the Plant 2 Site. These newly discovered areas of contamination do not change or add to the area-wide groundwater problem in and around the Site. As such, they do not affect or require changes or amendments to the 2009 ROD. This ESD only pertains to the 2007 ROD for contaminated soil, sediment and building-related contamination and debris.

III. Basis for the ESD

Table 3 summarizes the significant changes to the 2007 ROD-selected remedy for OU 4 documented in this ESD. Detailed descriptions of the changes are provided in the subsequent section. These changes are necessary in order to achieve the RAOs, to guarantee the remedy will be protective of human health and the environment, and to ensure that ARARs will be met.

Although RI/FS work is conducted at NPL sites to determine the nature and extent of contamination and the scope of the RA, sampling during the remediation phase of the project can sometimes reveal additional contamination or situations that require expanding or changing the remedy in order to achieve a protective cleanup. An ESD allows U.S. EPA to make these changes without impacting the cleanup schedule. In the case of Plant 2, we encountered

obstacles to excavation in some areas of the Plant 2 Site, such as a buried concrete obstruction in the Smelter Slab and Die Cast areas, contaminated sediment below the planned excavation depth of the North Ditch, buried utility lines in the North Ditch area, and some additional contamination requiring expansion of the remedy in the area near the East PCB Containment Cell (see Figure 3). Because hazardous waste will remain on some portions of the OMC Plant 2 Site above levels that allow for UU/UE, statutory five-year reviews of the Site remedy will still be required. Figure 8 provides an overview of the Plant 2 Site remediation areas.

Table 3 - Changes to Remedy Documented in this ESD

Remedy Component in 2007 ROD	Change to Remedy Documented in ESD
<ul style="list-style-type: none"> Cleanup levels for PAHs at the Site were based on both carcinogenic and non carcinogenic constituents. 	<ul style="list-style-type: none"> This ESD clarifies that the cleanup levels for PAH contaminants pertains only to the cPAHs. The cleanup levels were based on both noncancer (toxic) and cancer effects of cPAHs.
<ul style="list-style-type: none"> Excavate all on-site soil and sediment in the North Ditch and South Ditch exceeding ROD preliminary remediation goals (PRG) of 1 ppm PCBs and/or 2ppm PAHs. Transport the portion of excavated material containing greater than 50 ppm PCBs for disposal to an off-site TSCA-compliant facility. Transport the remainder of excavated material to a municipal landfill facility. 	<ul style="list-style-type: none"> Excavate contaminated soil to PRGs. If, contamination continues below the water table, excavate to TSCA levels. No functional change, however more contaminated material than originally anticipated will be sent to off-site TSCA-compliant facility if the PCB level is 50 ppm or greater, and to an off-site municipal landfill if the PCB level is below 50 ppm. Excavate North Ditch to base of sediment at the remedial design depth of 577 ft. mean sea level (MSL). If contamination continues below this depth, construct geotextile fabric cap and rock armor over remaining on-site contaminated portions of the North Ditch. Excavate contaminated sediment from off-site portions of the North Ditch to PRGs.
<ul style="list-style-type: none"> Excavate soil with contamination exceeding established cleanup levels in identified areas such as the Smelter Slab Area, Die Cast Area, and Plant 2 subsurface and surrounding surface soils. 	<ul style="list-style-type: none"> No functional change, however more contaminated material than originally anticipated will be sent to off-site TSCA-compliant if PCB concentration is 50 ppm or greater, and to an off-site municipal landfill if the PCB level is below 50 ppm.

<ul style="list-style-type: none"> • Backfill excavated areas with clean fill to grade. 	<ul style="list-style-type: none"> • No functional change, however more excavated areas will need to be graded, filled with clean soil, and revegetated.
<ul style="list-style-type: none"> • Demolish PCB-impacted OMC Plant 2 building and disposal of demolition materials in appropriate facility. 	<ul style="list-style-type: none"> • Not addressed through this ESD.
<ul style="list-style-type: none"> • Excavate contaminated soil containing greater than 1 ppm PCBs and/or 2 ppm cPAHs from the Dune Area • Dispose of excavated soil in appropriate off-site facility (TSCA-compliant landfill or municipal landfill); backfill to grade with clean soil; and, revegetate. 	<ul style="list-style-type: none"> • No functional change concerning contaminated soil excavation, except that no further excavation will occur in certain locations where the integrity of the East Containment Cell could be jeopardized. In these areas, a TSCA-compliant cap will be installed and extended eastward from the existing containment cell cap. • No functional change
<ul style="list-style-type: none"> • Dune Area Assessment and Restoration 	<ul style="list-style-type: none"> • No change
<ul style="list-style-type: none"> • Not necessary at the time of the 2007 ROD 	<ul style="list-style-type: none"> • Institutional Controls will be placed on those areas of OU 4 where waste exceeding cleanup levels is left in place.

Note: In most cases with the ESD, no functional changes are needed; however, greater volumes of material will be excavated and handled which will increase costs incrementally.

The information supporting the need for this ESD includes:

“Basis of Design Report, Final Design for Remediation of Soil, Sediment, and Building Media, OMC Plant 2 Site, Waukegan, Illinois.” (CH2M Hill, June 2008).

“Addendum to the Basis of Design Report, Final Design for Remediation of Soil, Sediment, and Building Media, OMC Plant 2 Site, Waukegan, Illinois.” (CH2M Hill, November 2009).

“Technical Memoranda, Supplemental Investigation Areas 3, 4, 5, and 12, Outboard Marine Corporation (OMC) Operable Unit 4 (OU 4), Waukegan County, Illinois.” (CH2M Hill, March 2011).

“Supplemental Design Report Area 3, Area 5, New Smelter Slab Area, and Concrete And Contract Documents (Including Specifications and Drawings) for Supplemental Remedial Action at the Outboard Marine Corporation Plant 2 Site, Waukegan, Illinois.” (SulTRAC, September 2011).

“Interim Remedial Action Report –Slab, Soil and Sediments Remediation, OMC Plant 2 Site, Waukegan, Lake County, Illinois” (SulTRAC, February 2, 2012).

VI. Significant Differences from the 2007 ROD Remedial Action

Post-remediation sampling indicated that contamination remained in the sediment beneath the excavation depth of 577 ft. MSL in the North Ditch on-site and off-site areas and in Dunes Area soil where the East Containment cell is located. Contamination was also found in the eastern portion of the Plant 2 building footprint, including the Former Smelter Building and Die Cast areas. These soils had been remediated according to the initial CH2M Hill RD reports of 2008 and 2009⁸ prepared on behalf of U.S. EPA. However, data from confirmatory sampling and a supplemental investigation conducted during the RA identified further soil and sediment contamination and concrete contamination in the above-mentioned areas that will be addressed as part of this ESD in order to meet the RAOs for OU 4.

A. Dunes Area

Remediation activities were completed within the Dunes Area, which is inclusive of Area 5, to the extent prescribed by the 2008-2009 RD documents. Subsequently, contamination exceeding the cleanup levels was identified on the northern and western margins of the excavation, including contamination near the East Containment Cell and the Dunes Area on the east. A supplemental investigation also identified contamination to the north and east of Area 5. This ESD addresses the contaminated areas by removing soil where possible. A cap is being installed within the area adjacent to Area 5, along the eastern boundary of the East Containment Cell. This cap covers soil that cannot be removed without jeopardizing the integrity of the East Containment Cell and drainage system. The multi-layered cap is constructed according to the criteria provided in U.S. EPA's TSCA Landfill Inspection Guidance Manual (U.S. EPA 1990). The location of the cap area and a conceptual cross section are shown on Figure 5. As previously mentioned, other unanticipated post-excavation areas exhibiting residual contamination above cleanup levels may also be capped if sufficient excavation and backfilling are not possible.

B. North Ditch Areas

Remediation activities were completed in the North Ditch (Area 3) to the original design depth of 577 feet MSL. Post-remediation confirmatory and supplemental sampling of the sediment identified residual PCB contamination that exceeded the cleanup levels for the Site. As previously discussed, the contamination was not considered to be principal threat material. This sediment contamination extended off-site to the east-- an area not included in the original RD documents of 2008-2009. The contamination is also located near some utilities that include a high-pressure natural gas line and a sewer force main.

⁸The initial or original remedial design reports included: “*Basis of Design Report, Final Design for Remediation of Soil, Sediment, and Building Media...*” (CH2M Hill 2008); and, “*Addendum to the Basis of Design Report, Final Design for Remediation of Soil, Sediment, and Building Media...*” (CH2M Hill 2009).

On-site and off-site portions of the North Ditch will be addressed under this ESD. The northern and western utility corridors will be handled separately under the upcoming ROD Amendment. The RAOs established in the RD documents were based on recreational use and sediment erosion. The off-site North Ditch sediment will be addressed by excavating contaminated sediment and disposing of the material in an off-site applicable facility. Temporary coffer dams are used to isolate sections of the ditch in order to mechanically excavate the sediment (see Figure 7). The on-site portions of the North Ditch are being addressed by excavating contaminated sediment also. Contaminated sediment below the remedial design depth of 577 ft. MSL is being capped to contain contaminated sediment and prevent the erosion of contaminants to the downstream ditch. The capping involves anchoring a geotextile fabric at the sides of the ditch to cover the excavation. Six inches of sand will be placed over the fabric, followed by a six-inch rock-armor surface layer for protection, as described in the Supplemental Design Report of September 2011⁹. (See Figure 6).

C. Plant 2 Building

Remediation of the Plant 2 Building slab and sub-slab soil was completed in July 2011. The RAOs were met in soil above the groundwater table. After discovering contamination in the Smelter Slab Area during remediation of the adjacent soil areas (Areas 10, 12 and 13), the slab and sub-slab soils were removed and the soil was remediated to meet RAOs. Residual soil contamination exceeding TSCA criteria of 50 ppm PCB is still present below the groundwater table at some areas beneath the Plant 2 building smelter slab on the eastern side of the Site. More recently, a residual PCB concentration of 880 ppm was found in one sub slab soil grid area. The highest PCB level at the margins of the soil remediation area was 40 ppm. These areas will be further excavated to meet the cleanup levels, except in the case where the water table is encountered. The excavations will be backfilled with clean material, graded and vegetated for stability.

Elsewhere throughout the building slab, soils were remediated to meet cleanup levels or were excavated below the water table. The Trim Building Slab located immediately north of the Triax Building was left in place for use as a concrete pad to support water treatment equipment to be used for the OU 1 Waukegan Harbor sediment remediation project. The Triax Building itself will be used to house portions of the treatment operation. When OU 1 remediation is complete, the city of Waukegan is responsible for the disposition of the former Trim Building and slab (see Figure 9).

D. Clarification of PAH Cleanup Levels

Another change to the 2007 ROD concerns the PAHs as an identified subset of the COCs. The chemical family of PAHs contains both carcinogenic and noncarcinogenic (toxic) constituents. The noncarcinogenic PAHs can produce adverse toxic health effects, but not carcinogenic effects, as a function of a receptor's exposure and uptake of the chemical. The cPAHs have potential to cause toxic effects as well as carcinogenic effects. The 2007 ROD did not

⁹ Supplemental Design Report Area 3, Area 5, New Smelter Slab Area, and Concrete And Contract Documents (Including Specifications and Drawings) for Supplemental Remedial Action at the Outboard Marine Corporation Plant 2 Site, Waukegan, Illinois (SulTRAC, September 2011).

distinguish cPAHs from PAHs as COCs; however, the April 2006 Feasibility Study, used to support the 2007 ROD conclusions, distinguishes cPAHs as the risk driver in addition to PCBs. This ESD clarifies that the PAH cleanup level relates solely to the cPAHs. This distinction is made because U.S. EPA's acceptable range for carcinogenic risk was exceeded by the cPAHs, whereas the acceptable risk threshold for noncarcinogenic risk was not exceeded. Hence, the cPAHs drove the remediation of the Plant 2 Site.

Essential to the RA changes discussed in this ESD is the groundwater monitoring that will be performed. Monitoring will ensure that the remedy is effectively protecting human health and the environment by not allowing the COCs to leach into the groundwater and migrate off-site. U.S. EPA will integrate this sampling into the Operation and Maintenance Plan for the Site. U.S. EPA will also prepare a Soil Management Plan and take appropriate corrective actions should the OU 4 remedy exhibit any deficiency or Site changes potentially jeopardize its integrity.

E. Support Agency Comments

The IEPA has indicated that it concurs with this ESD. An electronic mail correspondence to document its concurrence is included as an Attachment. U.S. EPA is placing the correspondence into the OMC Plant 2 Site Administrative Record.

VI. Statutory Determinations

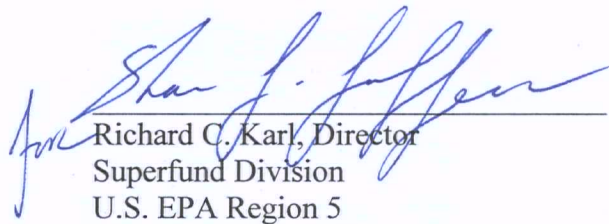
U.S. EPA has determined that with the changes we have made to the ROD in this ESD, are in accordance with CERCLA Section 121, the selected RA for the OMC Plant 2 Site is protective of human health and the environment. As per the Site Administrative Record, the changes also comply with federal and state requirements that are applicable or relevant and appropriate, use permanent solutions to the maximum extent practicable, and are cost-effective.

VII. Public Participation Compliance

U.S. EPA shall publish a notice of availability and a brief description of this ESD in the local newspaper as required by NCR 300.435(c)(2)(i)(B). We will also place this ESD into the Administrative Record file and information repository located at the Waukegan Public Library as required by NCP 300.435.(c)(2)(i)(A).

VIII. Declaration

U.S. EPA has determined that the adjustments to the OMC Plant 2 Site ROD provided in this ESD are significant but do not fundamentally alter the overall Site RA with respect to scope, performance, or cost. I therefore approve the issuance of this ESD for the OMC Plant 2 Site and the changes to the RA stated herein.


Richard C. Karl, Director
Superfund Division
U.S. EPA Region 5

7/2/12
Date

Table 1

Some Common Polycyclic Aromatic Hydrocarbons (PAHs)

<u>Chemical</u>	<u>Carcinogenic</u>
Acenaphthene	No
Anthracene	No
Benzo(a)anthracene*	Yes
Benzo(a)pyrene*	Yes
Benzo(b)fluoranthene*	Yes
Benzo(j)fluoranthene	Yes
Benzo(g,h,i)perylene	No
Benzo(k)fluoranthene*	Yes
Chrysene	Yes
Dibenz(a,h)anthracene*	Yes
Dibenzo(a,e)pyrene	Yes
Fluoranthene	No
Fluorene	No
Indeno(1,2,3-c,d)pyrene*	Yes
1-Methylnaphthalene	Yes
Naphthalene	No
Phenanthrene	No
Pyrene	No

*Carcinogenic PAHs that are identified as Chemicals of Concern in the ROD

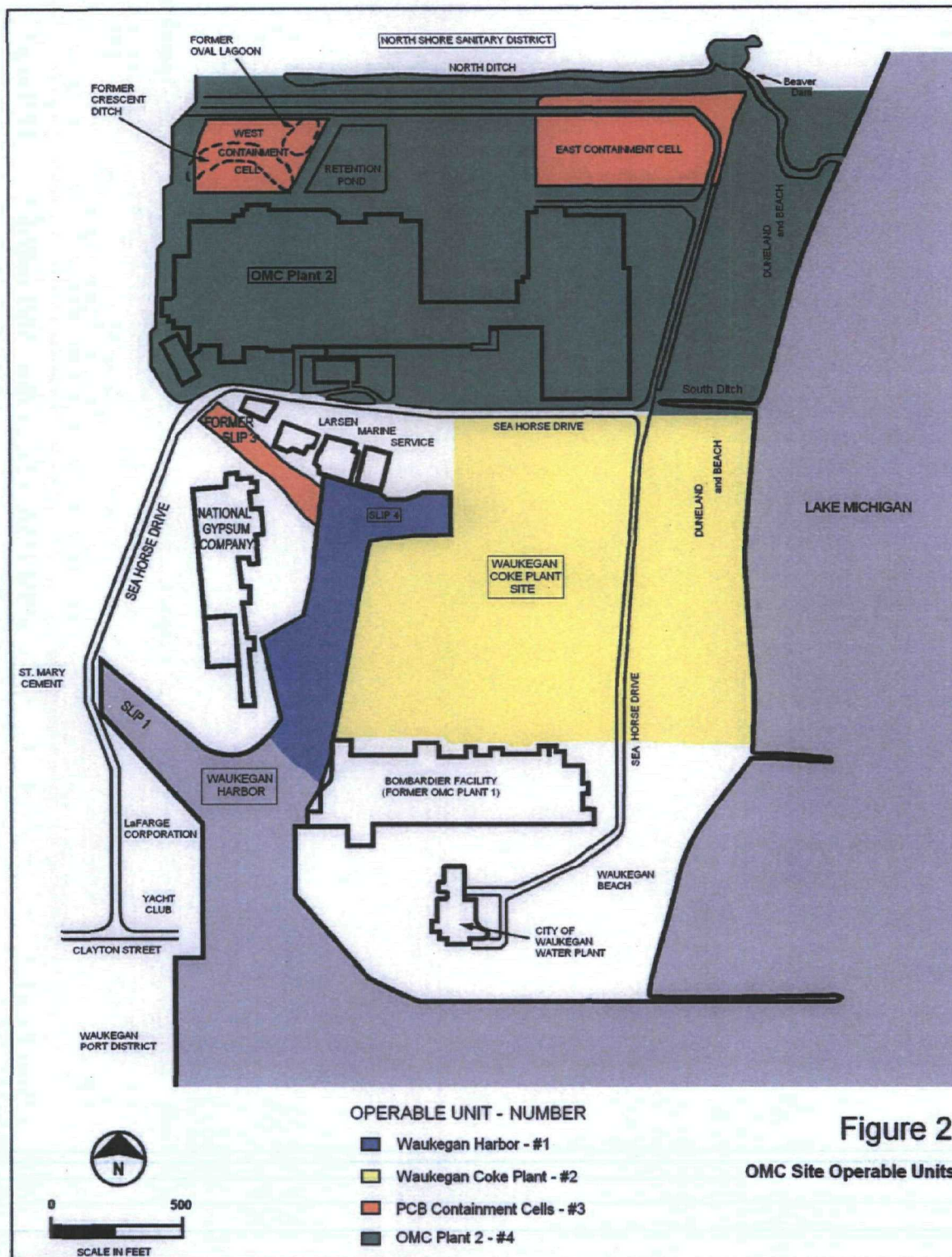
Figures:

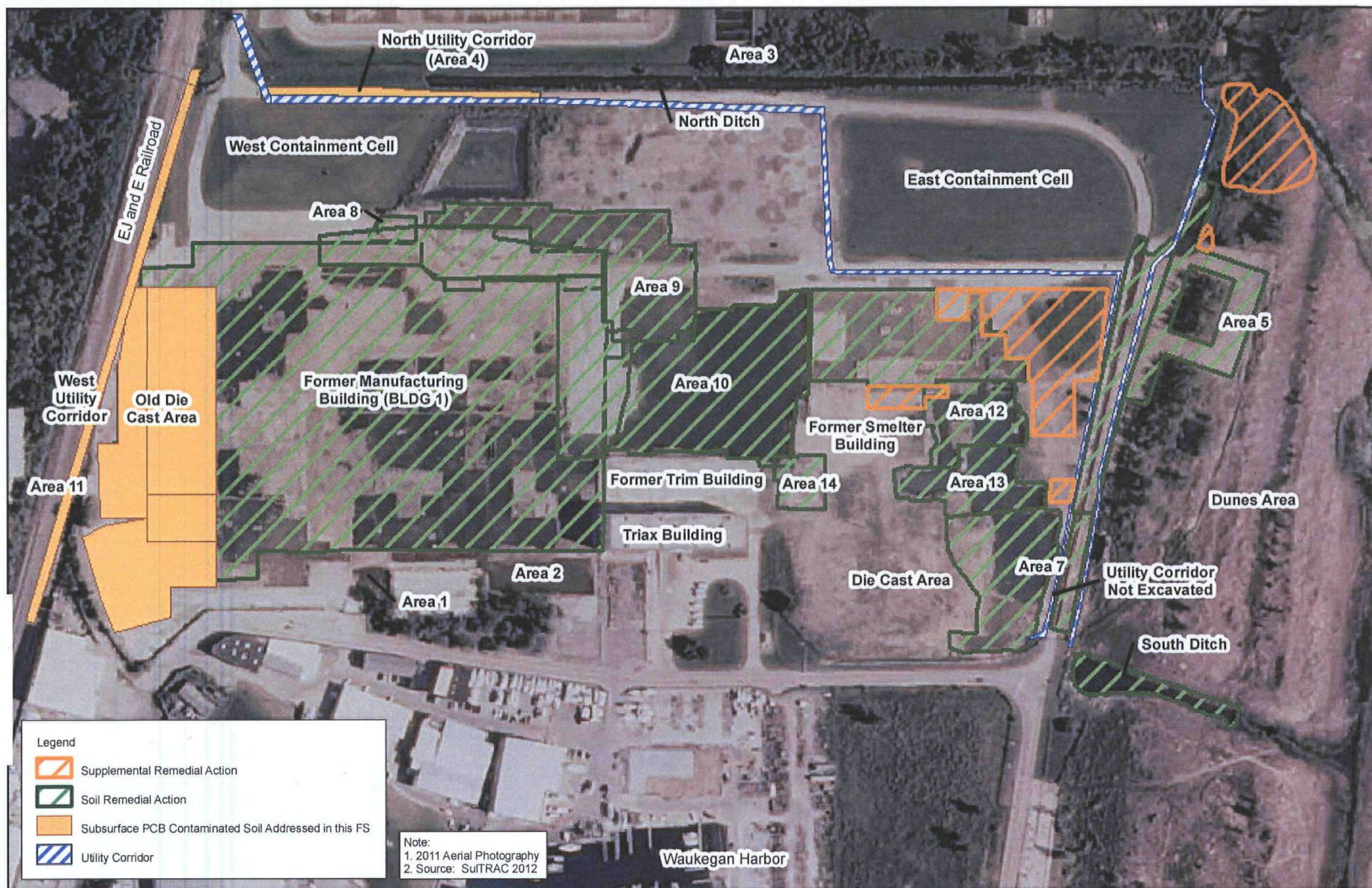
- 1 - OMC Plant 2 Site location, Waukegan, IL
- 2 - OMC Site Operable Unit Locations
- 3 - OMC Site Additional Remedial Action Areas
- 4 - Dune Soil Remediation Area
- 5 - East Cap Extension Layout and Cross-section
- 6 - On-Site North Ditch Capped Area
- 7 - Off-Site North Ditch Sediment Removal Area
- 8 - Site Map Showing Supplemental Remediation Areas
- 9 - Plant 2 Building Sub Slab Soil PCB Levels

Attachment:

State of Illinois Concurrence Letter for the Explanation of Significant Differences












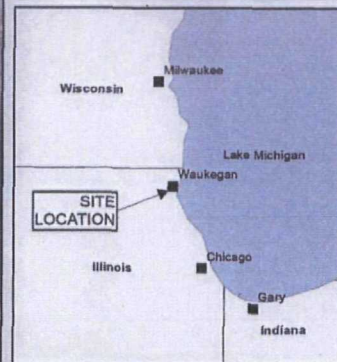


LEGEND

-  Proposed Soil Boring Location
-  Estimated Remediation Area For This Contract
-  Previous Excavation Boundary
-  Utility Corridor
-  OMC Beachfront Property Boundary
-  East Sediment Containment Cell
-  50' x 50' Grids



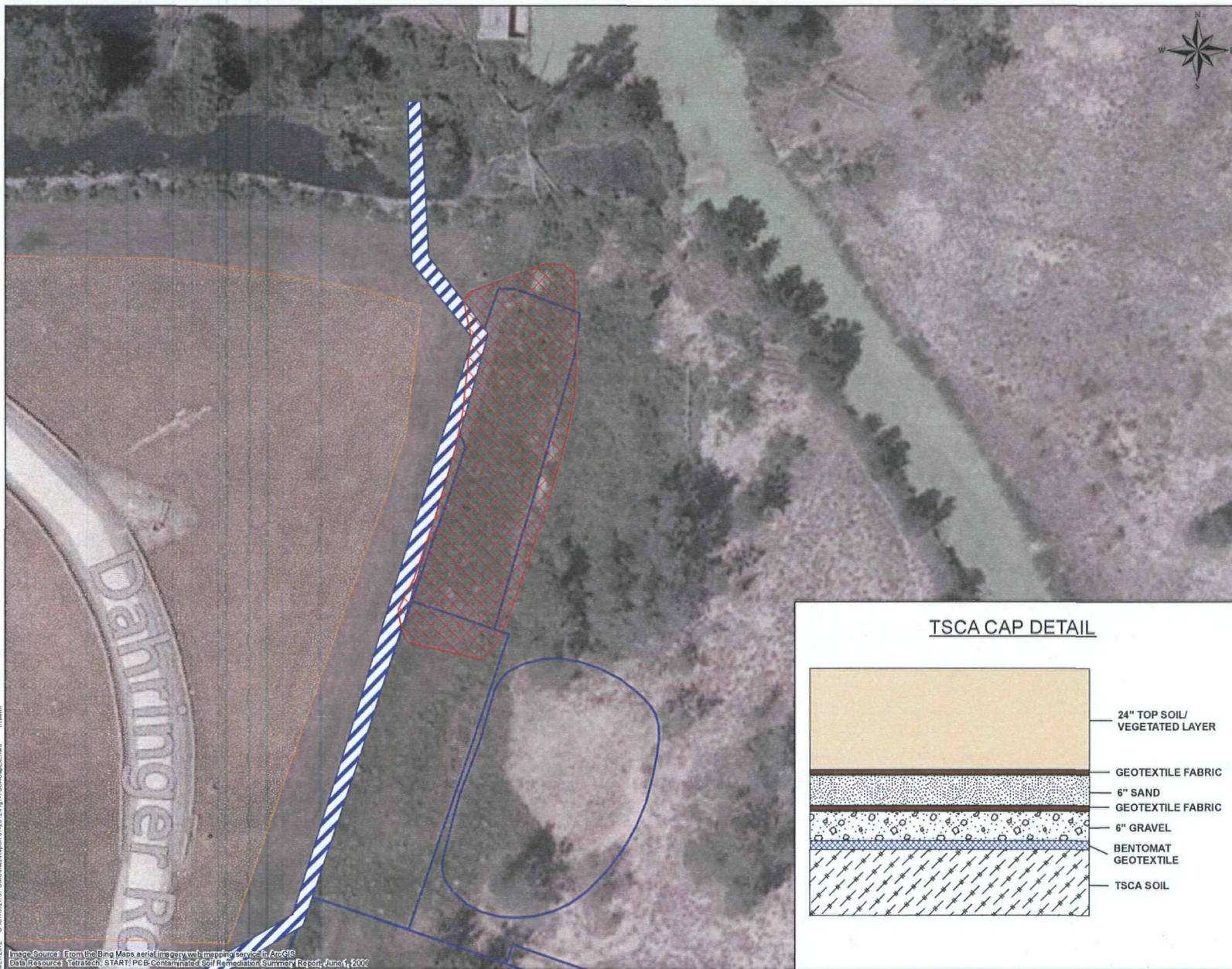
0 50 100 Feet



OMC PLANT 2 SITE
WAUKEGAN, ILLINOIS

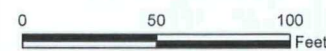
FIGURE 4
DUNE SOIL REMEDIATION AREA

ST SulTRAC

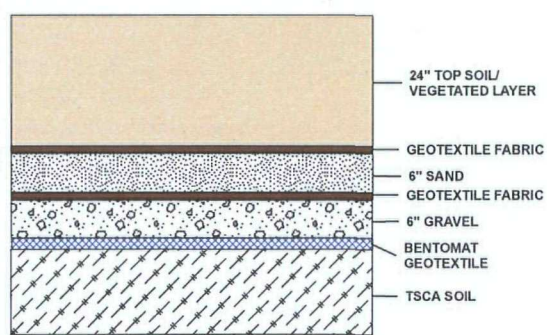


LEGEND

- TSCA Cap Area
- East Sediment Containment Cell
- Previous Excavation Boundary
- Utility Corridor



TSCA CAP DETAIL







OMC PLANT 2 SITE
 WAUKEGAN, ILLINOIS

FIGURE 5
 TSCA CAP EXTENSION





LEGEND

-  Location Of Sediment Cap Installation
-  Utility Corridor
-  50' x 50' Grids
-  Fence

0 100 200
Feet



OMC PLANT 2 SITE
WAUKEGAN, ILLINOIS

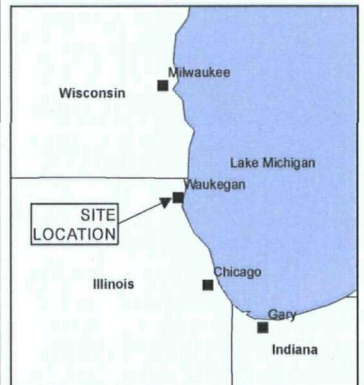
FIGURE 6
CAP ON NORTH DITCH

ST SulTRAC



LEGEND

- PCB < 1 mg/kg
- Sediment Removal Area
- East Sediment Containment Cell
- OMC Beachfront Property Boundary
- Previous Excavation Boundary
- Utility Corridor



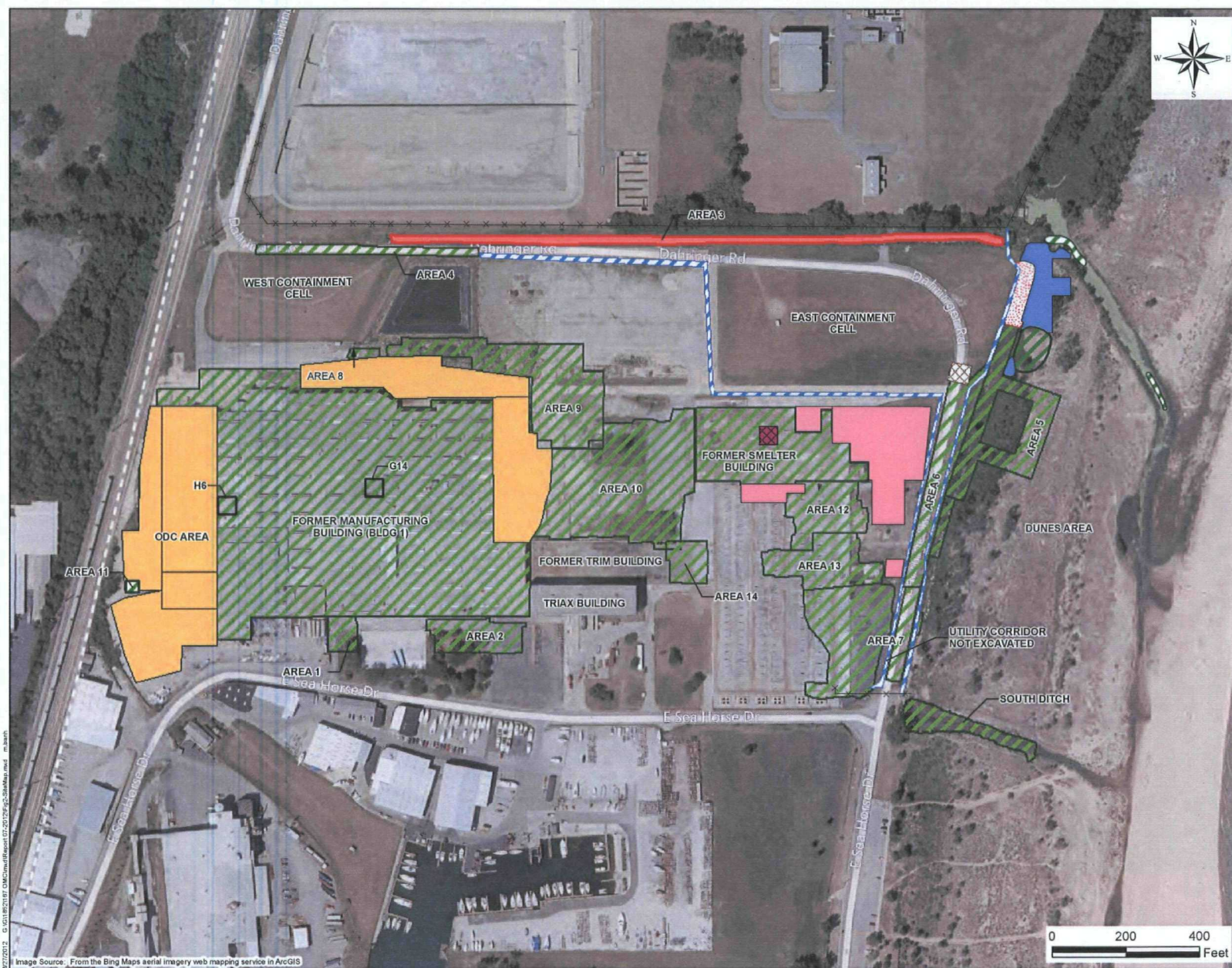
OMC PLANT 2 SITE
WAUKEGAN, ILLINOIS

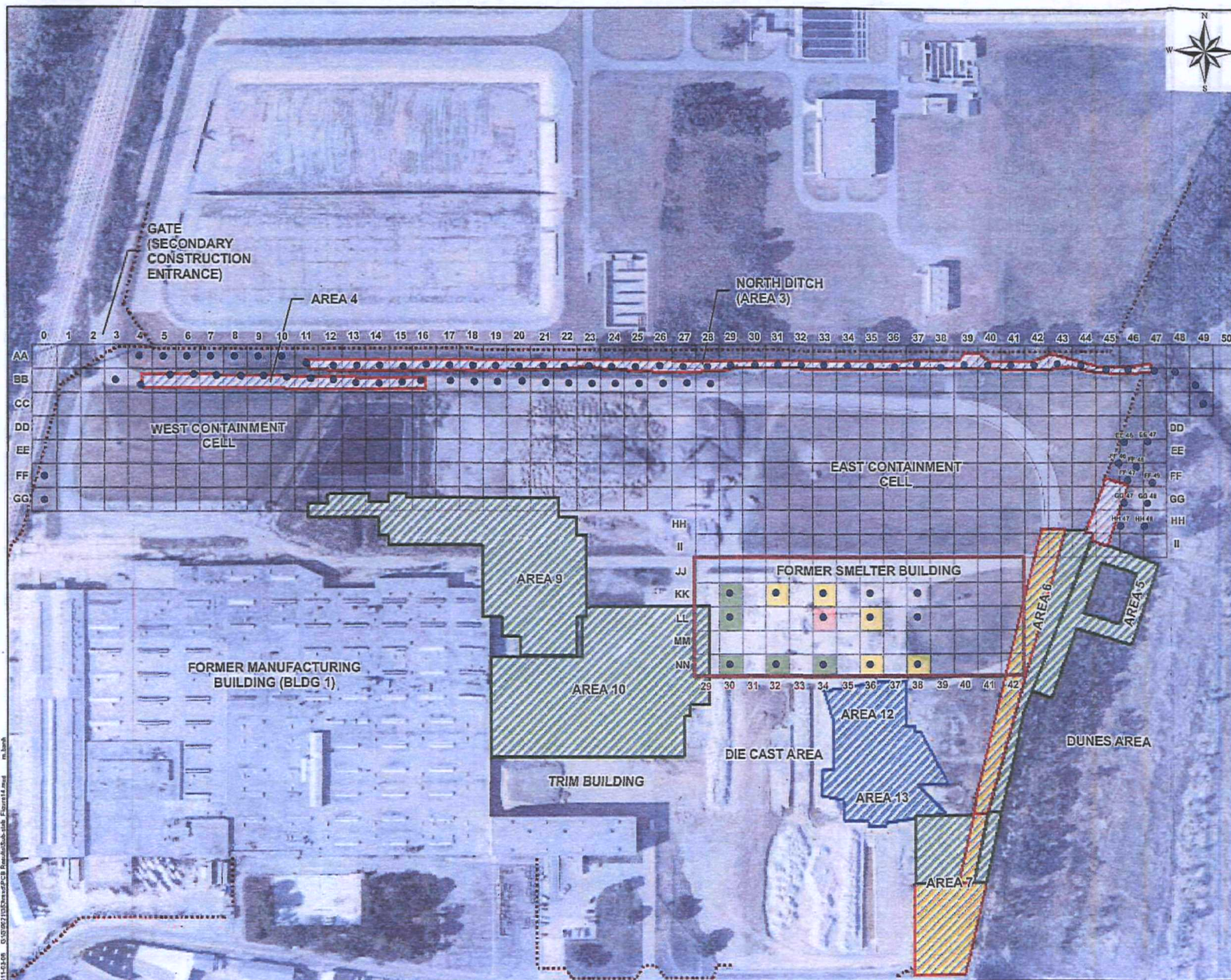
FIGURE 7
OFF-SITE WATERWAY SEDIMENT
REMOVAL AREAS AND CONFIRMATION
SAMPLING RESULTS



0 100 200
Feet

Image Source: From the Bing Maps aerial imagery web mapping service in ArcGIS





LEGEND

- BORING LOCATION
- FENCE
- REMEDIATION COMPLETED
- REMEDIATION NOT STARTED
- REMEDIATION IN PROGRESS
- DELINEATION REQUIRED
- PCB < 1ppm
- PCB > 1 < 50ppm
- PCB > 50ppm

NOTE:

SAMPLE RESULTS FOR AA-11 THROUGH AA-46, AND BB-4 THROUGH BB-17 ARE FROM THE POST-EXCAVATION CONFIRMATION SAMPLING RESULTS.

0 200 400 Feet

SOURCE: AIRPHOTO IGS 2005



OMC PLANT 2 SITE
WAUKEGAN, ILLINOIS

FIGURE 4
PCB RESULTS - SUB SLAB SOIL

ST SuITRAC

Attachment

State of Illinois Concurrence Letter for the Explanation of Significant Differences



RE: ESD for OMC Plant 2 Site
Rednour, Erin to: SHEILA SULLIVAN

06/22/2012 04:11 PM

From: "Rednour, Erin" <Erin.Rednour@Illinois.gov>
To: SHEILA SULLIVAN/R5/USEPA/US@EPA,

History: This message has been replied to and forwarded.

Hi Sheila,

Yes, this is work that was discussed in a meeting with Clarence Smith and Bob Carson and no one had any objections to it. So I am sending you this e-mail to show that we are in general concurrence, but I may have to do a more formal approach later.

From: SHEILA SULLIVAN [mailto:Sullivan.Sheila@epamail.epa.gov]
Sent: Thursday, June 21, 2012 2:17 PM
To: Rednour, Erin
Cc: Kevin Adler; Timothy Drexler
Subject: ESD for OMC Plant 2 Site

Hi Erin,

I hope you are doing well. Thanks much for sending me the Jennison-Wright photos. I never did find my camera.

I have attached a copy of the ESD prepared for the OMC Plant 2 Site and a separate file containing the figures. I sent the draft to you and our headquarters on May 3rd. I received comments from headquarters which, along with other in-house comments, have been incorporated into the document. I need to start circulating the document through formal sign-off because we have a June deadline. Since we are all in agreement with the work that has been, or is being done for this ESD, can you zip off a concurrence e-mail to me for our file? If you would like to add something more formal later, that will be fine.

Let me know if you have any questions. Thanks much!

Best,
Sheila A. Sullivan
Project Manager
Superfund Division
U.S. EPA, Region 5
Tel: (312) 886-5251

(See attached file: OU4 ESD_Draft_RevisedSAS_6_20_2012.docx)(See attached file: ESD for OMC Plant 2 Figures 1-8.pdf)